

WHAT IS CLAIMED IS:

1. An isolated or recombinant nucleic acid comprising a nucleic acid sequence having at least 95% sequence identity to SEQ ID NO:1.

2. The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis in insect cells.

3. The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis in *Spodoptera frugiperda* or *Bombyx mori* cells.

4. The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis in mammalian cells.

5. The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis in plant cells.

6. The isolated or recombinant nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide capable of inhibiting caspase 9.

7. An isolated or recombinant nucleic acid encoding a polypeptide having a sequence as set forth in SEQ ID NO:2.

8. An isolated or recombinant nucleic acid comprising a nucleic acid sequence as set forth in SEQ ID NO:1.

9. An expression cassette comprising at least one nucleic acid operably linked to a promoter, wherein the nucleic acid comprises a sequence having at least 95% sequence identity to SEQ ID NO:1.

10. The expression cassette of claim 9, wherein the promoter is a constitutive or an inducible promoter.

11. The expression cassette of claim 9, wherein the promoter is a developmentally regulated or a tissue specific promoter.

12. The expression cassette of claim 9, wherein the nucleic acid encodes a polypeptide having a sequence as set forth in SEQ ID NO:2.

13. A transformed cell comprising a nucleic acid sequence having at least 95% sequence identity to SEQ ID NO:1.

14. The transformed cell of claim 13, wherein the cell is a mammalian cell.

15. The transformed cell of claim 13, wherein the cell is an insect cell.
16. The transformed cell of claim 15, wherein the insect cell is a *Spodoptera frugiperda* cell.
17. The transformed cell of claim 13, wherein the cell is a plant cell.
18. The transformed cell of claim 13, wherein the cell is a yeast cell.
19. The transformed cell of claim 13, wherein the nucleic acid encodes a polypeptide having a sequence as set forth in SEQ ID NO:2.
20. A non-human transgenic animal comprising a nucleic acid sequence having at least 95% sequence identity to SEQ ID NO:1.
21. The nonhuman transgenic animal of claim 20, wherein the animal is a rat or a mouse.
22. The nonhuman transgenic animal of claim 20, wherein the nucleic acid encodes a polypeptide having a sequence as set forth in SEQ ID NO:2.
23. The nonhuman transgenic animal of claim 20, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis.
24. A transgenic plant comprising a nucleic acid sequence having at least 95% sequence identity to SEQ ID NO:1.
25. The transgenic plant of claim 24, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis.
26. The transgenic plant of claim 24, wherein the plant is abiotic or biotic insult resistant.
27. The transgenic plant of claim 26, wherein the biotic insult is induced by a plant pathogen.
28. The transgenic plant of claim 27, wherein the plant pathogen is a virus, a fungus, a bacteria or a nematode.
29. The transgenic plant of claim 26, wherein the abiotic insult is induced by high moisture, low moisture, salinity, nutrient deficiency, air pollution, high temperature, low temperature, soil toxicity, herbicides or insecticides.
30. The transgenic plant of claim 24, wherein at least a portion of the plant exhibits a decreased level of senescence.

31. A seed capable of germinating into a plant having in its genome a heterologous nucleic acid sequence having at least 95% sequence identity to SEQ ID NO:1.

32. The seed of claim 31, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis in a plant cell.

5 33. An isolated or recombinant polypeptide comprising a sequence having at least 95% sequence identity to SEQ ID NO:2.

34. The isolated or recombinant polypeptide of claim 33, wherein the polypeptide is capable of inhibiting apoptosis in insect cells.

10 35. The isolated or recombinant polypeptide of claim 33, wherein the polypeptide is capable of inhibiting apoptosis in *Bombyx mori* cells.

36. The isolated or recombinant polypeptide of claim 33, wherein the polypeptide is capable of inhibiting apoptosis in mammalian cells.

37. The isolated or recombinant polypeptide of claim 33, wherein the nucleic acid encodes a polypeptide capable of inhibiting apoptosis in plant cells.

15 38. The isolated or recombinant polypeptide of claim 33, wherein the polypeptide is capable of inhibiting caspase 9.

39. An isolated or recombinant polypeptide comprising a sequence as set forth in SEQ ID NO:2.

20 40. A fusion protein comprising a sequence having at least 95% sequence identity to SEQ ID NO:2 and a second domain.

41. The fusion protein of claim 40, wherein the second domain comprises glutathione S-transferase (GST).

25 42. An antibody or binding fragment thereof, wherein the antibody or fragment specifically binds to a polypeptide or an immunogenic fragment thereof, wherein the polypeptide comprises a sequence having at least 95% sequence identity to SEQ ID NO:2.

43. An antibody or binding fragment thereof, wherein the antibody or fragment specifically binds to a protein having an amino acid sequence as set forth in SEQ ID NO:2 or an immunogenic fragment thereof.

30 44. An array comprising a nucleic acid comprising a sequence having at least 95% sequence identity to SEQ ID NO:1.

45. A method of detecting or isolating a polypeptide, wherein the polypeptide comprises a sequence having at least 95% sequence identity to SEQ ID NO:2, comprising contacting a biological sample with an antibody as set forth in claim 38 or claim 39.

5 46. A method of making a recombinant polypeptide comprising expressing a nucleic acid comprising a sequence having at least 95% sequence identity to SEQ ID NO:1.

47. A method for inhibiting apoptosis in a cell comprising the following steps:

10 (a) providing an isolated or recombinant polypeptide comprising a sequence having at least 95% sequence identity to SEQ ID NO:2, wherein the polypeptide is capable inhibiting apoptosis in the cell, and

(a) contacting the polypeptide with the cell in an amount sufficient to inhibit apoptosis in the cell.

15 48. A method for inhibiting apoptosis in a cell comprising the following steps:

(a) providing an isolated or recombinant nucleic acid comprising a sequence having at least 95% sequence identity to SEQ ID NO:1, wherein the nucleic acid encodes polypeptide capable of inhibiting apoptosis in the cell, and

20 (b) contacting the nucleic acid with the cell and expressing the nucleic acid to produce an amount of polypeptide sufficient to inhibit apoptosis in the cell.

49. The method of claim 47 or claim 48, wherein the cell is an insect cell.

50. The method of claim 49, wherein the insect cell is a *Bombyx mori* cell.

51. The method of claim 49, wherein the insect cell is a *Spodoptera frugiperda* cell.

25 52. The method of claim 47 or claim 48, wherein the cell is a mammalian cell.

53. The method of claim 47 or claim 48, wherein the cell is a plant cell.

30 54. A method for identifying an agent that can modulate the activity of a polypeptide, wherein the polypeptide comprises a sequence having at least 95% sequence identity to SEQ ID NO:2 and is capable inhibiting a caspase 9 protease, comprising:

(a) providing an isolated or recombinant polypeptide comprising a sequence having at least 95% sequence identity to SEQ ID NO:2 that is capable inhibiting a caspase 9 protease, and a test agent,

(b) contacting the caspase 9 protease and polypeptide in the presence and
5 absence of the test agent; and

(c) measuring the ability of the polypeptide to inhibit the caspase 9 protease in the presence and absence of the test agent, wherein an increase or decrease in the ability of the polypeptide to inhibit the caspase 9 protease in the presence of the test agent identifies the test agent as a modulator of the polypeptide's activity.

10 55. A method for identifying an agent that can modulate the activity of a polypeptide, wherein the polypeptide comprises a sequence having at least 95% sequence identity to SEQ ID NO:2 and is capable inhibiting apoptosis in a cell, comprising:

(a) contacting a cell expressing the polypeptide recombinantly in the presence and absence of a test agent before, during or after inducing apoptosis in the cell; and

15 (b) measuring the amount or degree of polypeptide activity in the cell in the presence and absence of the test agent, wherein an increase or decrease in the amount or degree of polypeptide activity in the cell in the presence of the test agent identifies the test agent as a modulator of the polypeptide's activity.

20 56. The method of claim 55, wherein the cell is an insect cell.

57. The method of claim 56, wherein the cell is a *Bombyx mori* cell.

58. The method of claim 55, wherein the cell is a plant cell.

59. The method of claim 55, wherein the cell is a mammalian cell.

60. The method of claim 55, wherein the cell is a yeast cell.

25 61. The method of claim 55, wherein the degree of polypeptide activity in the cell is determined by measuring the amount or degree of apoptosis in the cell.

62. The method of claim 55, wherein the degree of polypeptide activity in the cell is determined by measuring the amount or degree of caspase protease activity in the cell.

30 63. The method of claim 55, wherein the degree of polypeptide activity in the cell is determined by measuring the amount or degree of DNA fragmentation in the cell.

64. The method of claim 55, wherein the degree of polypeptide activity in the cell is determined by measuring the amount or degree of cleavage of substrates of caspases in the cell.

65. A method of generating an abiotic or biotic insult-resistant plant comprising the following steps

(a) providing an isolated or recombinant polypeptide comprising a sequence having at least 95% sequence identity to SEQ ID NO:2, wherein the polypeptide is capable inhibiting apoptosis in a plant cell, and

(a) contacting the polypeptide with the plant in an amount sufficient to inhibit apoptosis in the plant, thereby generating a plant that is biotic insult resistant.

66. A method for generating an abiotic or biotic insult-resistant plant comprising the following steps:

(a) providing an isolated or recombinant nucleic acid comprising a sequence having at least 95% sequence identity to SEQ ID NO:1, wherein the nucleic acid encodes polypeptide capable of inhibiting apoptosis in a plant cell, and

(b) contacting the nucleic acid with the plant and expressing the nucleic acid to produce an amount of polypeptide sufficient to inhibit apoptosis in the plant.

67. The method of claim 65 or claim 66, wherein the biotic insult is induced by a plant pathogen.

68. The method of claim 67, wherein the plant pathogen is a virus, a fungus, a bacteria or a nematode.

69. The method of claim 65 or claim 66, wherein the abiotic insult is induced by high moisture, low moisture, salinity, nutrient deficiency, air pollution, high temperature, low temperature, soil toxicity, herbicides or insecticides.